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```
%%QA/QC for Dissolved Organic Runs performed on Shimadzu TOC-L Carbon
%%Analyzer
```

```
clear
cruise='P02';
```

Open TOC-L run data

```
path = '/Users/joaquin/Documents/CVO/Lab stuff/DOC/';

run_file = uigetfile([path,'Runs/*.csv'],...
    'Select TOC Run Report file');

fid = fopen(run_file);
if fid==-1
    warning('File not found, make sure folder is added to path');
end

C_text = textscan(fid, '%s', 5, 'delimiter', ',');
C_data = textscan(fid, '%s %s %f %s %f',...
    'delimiter', ',');
fclose(fid);
```

Assign variable names to run data columns

```
cols=size(C_text{1});

for i = 1:cols(1);
    colnames = C_text{1};
    v = genvarname(colnames(i), who);
    eval([char(v) '= C_data{i};']);
end

disp ('TOC run loaded');
```

TOC run loaded

QC plots

```
%Plot of runs of Mili-Q water, 'Q'.
```

```
close all
```

```
q_index=find(strcmp(run_id,'Q')==1);
```

```
figure('Position',[2000 1000 650 750]);
```

```
subplot(3,1,1);
```

```
plot(DOC(q_index),'o')
```

```
ylim([-ceil(max(abs([min(DOC(q_index)) max(DOC(q_index))]))/10)....
```

```
*10 ceil(max(abs([min(DOC(q_index)) max(DOC(q_index))]))/10)*10])
```

```
grid off
```



```
a=get(gca,'xtick');
```

```
% set(gca,'xlim',[a(1)-mean(diff(a)) a(end)+1]);
```

```
% a=get(gca,'xtick');
```

```
hline(0,'blue')
```



```
meanQ = mean(DOC(q_index));
```

```
hline(meanQ,'red');
```



```
xx=get(gca,'xlim');
```



```
text(xx(1)+range(xx)*.75,meanQ,[ 'Mean= ' num2str(meanQ,4)],...
```

```
'color','red',...


```
'Fontsize',15,...
```



```
'VerticalAlignment','bottom');
```


```
for i = 1:length(q_index);
```



```
line([i i],[0 DOC(q_index(i))]);
```



```
end
```


```
ylabel('ug C L^{-1}', 'FontSize',17);
```



```
xx=get(gca,'xlim');
```



```
text(xx(1)+range(xx)*.12,max(DOC(q_index)), 'Milli-Q Runs', 'FontSize',17);
```


```
%Coefficient of variation for Q runs
```



```
q_cv = std(DOC(q_index))/mean(DOC(q_index))*100;
```


```
yl=get(gca,'ylim');
```


```
xx=get(gca,'xlim');
```



```
text(xx(1)+range(xx)*.75,yl(1)+(range(yl)*.15),['CV= ' num2str(q_cv,3) '%'],...
```



```
'color','red',...


```
'Fontsize',15,...
```



```
'VerticalAlignment','bottom');
```



```
%Check Standards
```


```


```

```

%KHP

KHP_index=find(strcmp(run_id,'KHP1138')==1);

chk_conc=1138; % Concentration of potassium phthalate (KHP)
    % check standards in ugC/L

subplot(3,1,2);
plot(DOC(KHP_index), 'o')

a=get(gca,'ylim');
yl = [chk_conc-(a(2)-chk_conc) a(2)];
yl = yl.*[.8 1.2];
set(gca,'ylim',yl)
set(gca,'xlim',[0 length(KHP_index)+1])

grid off
hline(chk_conc,'blue')

meanKHP = mean(DOC(KHP_index));
hline(meanKHP,'red');
a=get(gca,'xtick');
xx=get(gca,'xlim');
text(xx(1)+range(xx)*.75,meanKHP,[ 'Mean= ' num2str(meanKHP,4)],...
    'color','red',...
    'FontSize',15,...
    'VerticalAlignment','bottom');

for i = 1:length(KHP_index);
    line([i i],[chk_conc DOC(KHP_index(i))]);
end

ylabel('ug C L^{-1}', 'FontSize',17);
text(.25,max(DOC(KHP_index))*1.1, ...
    ['KHP check stds ' num2str(chk_conc) ' ug C L^{-1}'],...
    'FontSize',17);

%Coefficient of variation for KHP runs

KHPcv = std(DOC(KHP_index))/mean(DOC(KHP_index))*100;

yl=get(gca,'ylim');

xx=get(gca,'xlim');
text(xx(1)+range(xx)*.75,yl(1)+(range(yl)*.15),...
    ['CV= ' num2str(KHPcv,3) '%'],...
    'color','red',...
    'FontSize',15,...
    'VerticalAlignment','bottom');

%Performance metrics/Error analysis (Root mean percentage error)
%KHP check standards

T(1:length(KHP_index))=chk_conc;

KHPerror=errperf(T',DOC(KHP_index), 'rmspe');

```

```

text(a(2),yl(1)+(range(yl)*.15),[ 'RMSE%=' num2str(KHPerror,3)],...
    'color','red',...
    'Fontsize',15,...
    'VerticalAlignment','bottom');

%DSR Deep Seawater Reference runs http://yyy.rsmas.miami.edu/groups/
%                                biogeochem/Table1.htm

DSR_index=find(strcmp(run_id,'DSR')==1);

dsr_conc=510; %Mid range of consensus values of
                %DOC for DSR batch used: Lot # 12-11

subplot(3,1,3);
plot(DOC(DSR_index),'o')

a=get(gca,'ylim');
yl = [dsr_conc-(a(2)-dsr_conc) a(2)];
yl = yl.*[.8 1.2];
set(gca,'ylim',yl)
set(gca,'xlim',[0 length(DSR_index)+1])

grid off
hline(dsr_conc,'blue')
hline(41*12,'b:'); hline(44*12,'b:') % DSR upper and lower limits for
                                         % consensus values, in ugC/L
meanDSR = mean(DOC(DSR_index));
hline(meanDSR,'red');
a=get(gca,'xtick');
xx=get(gca,'xlim');
text(xx(1)+range(xx)*.75,meanDSR,[ 'Mean=' num2str(meanDSR,4)],...
    'color','red',...
    'Fontsize',15,...
    'VerticalAlignment','bottom');

for i = 1:length(DSR_index);
    line([i i],[dsr_conc DOC(DSR_index(i))]);
end

ylabel('ug C L^{-1}', 'FontSize',17);
text(.25,max(DOC(DSR_index))*1.1,...,
    ['DSR Lot # 12-11, 492-528' ' ug C L^{-1}'], 'FontSize',17);

%Coefficient of variation for DSR runs

DSRcv = std(DOC(DSR_index))/mean(DOC(DSR_index))*100;

yl=get(gca,'ylim');
xx=get(gca,'xlim');
text(xx(1)+range(xx)*.75,yl(1)+(range(yl)*.15),...
    ['CV=' num2str(DSRcv,3) '%'],...
    'color','red',...
    'Fontsize',15,...
    'VerticalAlignment','bottom');

```

```

xlabel('Run order','FontSize',17);

%Performance metrics/Error analysis (Root mean percentage error)
%DSR

clear('T')
T(1:length(DSR_index))=510;

DSRerror=errperf(T',DOC(DSR_index), 'rmspe');

xx=get(gca,'xlim');

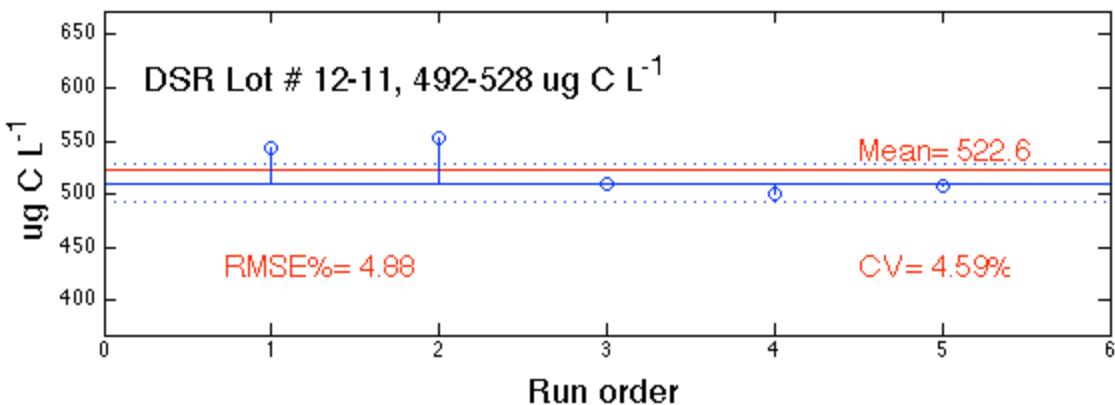
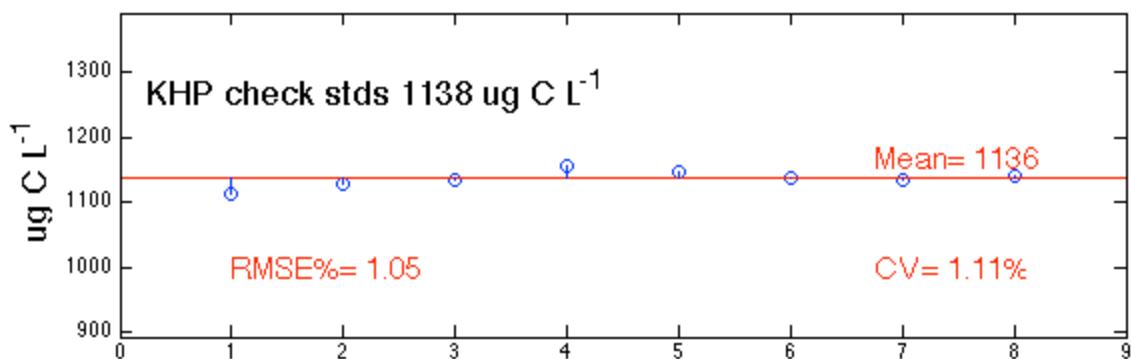
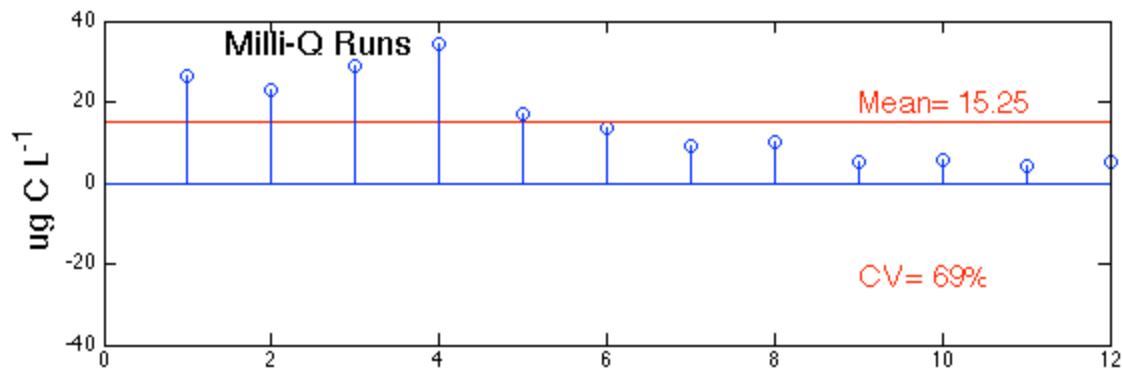
text(xx(1)+range(xx)*.12,yl(1)+(range(yl)*.15),...
      ['RMSE%=' num2str(DSRerror,3)],...
      'color','red',...
      'Fontsize',15,...
      'VerticalAlignment','bottom');

% Figure title
ha = axes('Position',[0 0 1 1], 'Xlim',[0 1], 'Ylim',[0 1],...
          'Box','off', 'Visible','off', 'Units','normalized', 'clipping' , 'off');

text(0.5, 1,['DOC Run QA/QC metrics, ' cruise ' Cruise'],...
      'HorizontalAlignment',...
      'center','VerticalAlignment', 'top','FontSize',17);

```

DOC Run QA/QC metrics, P02 Cruise



Sample Results

```
samples=find(isnan(sample_id)==0);

figure('Position',[2000 100 450 250]);

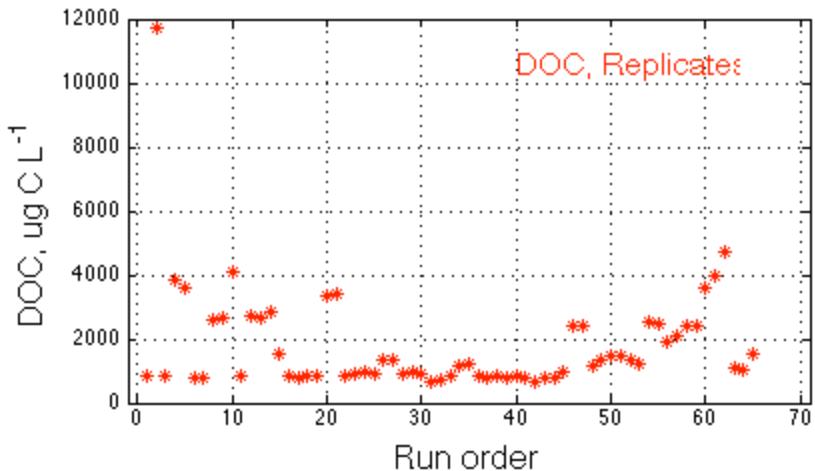
%DOC
plot(DOC(samples), '*', 'color', 'r');
```

```

grid on
xlabel('Run order','FontSize',16)
ylabel('DOC, ug C L^{-1}', 'FontSize',16)

yt=get(gca,'ytick');xt=get(gca,'xtick');
text(xt(end-3),yt(end-1),'DOC, Replicates',...
    'FontSize',15,...,
    'VerticalAlignment','bottom',...
    'color','r')
xlim([xt(1)-1 xt(end)+1]);

```



Export Run Report

```

rep = [sample_id(samples) DOC(samples)]; %sample_id, DOC ugC L^-1

dlmwrite ([cruise '_TOC_run_report' ], rep)
disp ('DOC run report generated');

```

DOC run report generated